NEWS REPORT

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Some Problems in the National Blood Program

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DURING World War II, and again over the past few years, the National Research Council, in cooperation with other agencies, has been active in developing research in the blood field. One year ago, the Office of Defense Mobilization established an integrated National Blood Program designed to coordinate the needs of the Department of Defense, Civil Defense, and the civilian population. The Council, under this Program, has accepted advisory responsibility for guiding further research and development.

A national blood program must give judicious consideration to the varied therapeutic uses of blood and its separable components and to the technical limitation attending the preservation of these products. For present purposes, we may be content to distinguish the two main components of blood as the red cells, which are responsible for conveying oxygen from the lungs to the tissues, and the plasma, which is the fluid in which the red cells are suspended. In disturbances of the circulation, the transfusion of blood, or of a fraction of blood, is indicated not only when there has been extensive loss of blood—that is, of red cells and plasma—but also when there has been loss of plasma alone as a result of seepage of fluid through damaged capillaries. The consequent circulatory collapse is commonly referred to as shock. This condition may arise from a variety of causes but is most frequently encountered in burns and in mechanical injury.

When blood is lost, the logical form of replacement therapy is the transfusion of whole blood. In shock due to other causes, the urgent need is for circulating fluid rather than for red cells. Whole blood is frequently given but plasma may be just as effective. The administration of crystalloid solutions does not supply the need for fluid because these solutions rapidly leave the circulation unless they contain an amount of colloid sufficient to maintain the osmotic pressure of the circulating fluid at its normal level. The proteins of the plasma supply this colloid requirement.

The proteins of plasma are a complex mixture, each component having its own particular function in the body. As far as the colloid osmotic pressure is concerned, the most important component of the plasma is the albumin. It comprises about fifty per cent of the protein present but, because of its low molecular weight, contributes almost seventy-five per cent of the colloid osmotic pressure of the plasma. In extensive clinical studies it has been demonstrated that a solution of albumin of the proper concentration is as effective as is plasma in restoring the circulation in shock. Thus, the blood products of interest to defense are whole blood, plasma, and albumin.

The logistics of blood procurement are largely conditioned by the relative stabil-

ities of these three materials. Whole blood is collected under sterile conditions, with the addition of citrate and glucose, and is stored at 4-10°C. The citrate prevents coagulation of the blood and the glucose appears to lengthen the survival time of the red cells. Even under these conditions, which are the best that have yet been contrived, whole blood can be stored for only three weeks. After this period, the red cells begin to deteriorate rapidly and the blood is no longer suitable for transfusion. The plasma can still be salvaged and is suitable for the preparation of albumin and other protein fractions, but the red cells no longer have therapeutic value. This is a distressing wastage. A great economy in blood procurement could be effected if methods could be devised for the preservation of blood or of separated red cells for long periods.

The preservation of biological systems is favored by low temperatures because the spontaneous reactions and the enzyme activities which lead to the degradation of the labile components are suppressed. The system is placed in hibernation. It is in a condition of suspended animation. The extent to which the temperature can be reduced is, unfortunately, limited by the destructive effect which the freezing of water often has on the structural integrity of the system. Intact cells, in particular, are sensitive to freezing possibly because the ice crystals that form rupture essential structures. When the cells are thawed, their functional activities are not recovered. Some interesting studies are now in progress on the freezing of red cells in dilute solutions of glycerol. Frozen cells that have been stored for months at the temperature of solid carbon dioxide have been found to have survival times, when thawed and transfused in man, almost as long as fresh red cells. Should these observations be confirmed, a number of technical problems must still be solved before such a type of treatment could be applied to the storage of blood cells on a large scale.

The problem of preservation is a difficult but not a discouraging one. Methods of preserving tissues are improving year by year as more is learned of the specific sensitivities of different types of cells. It may be anticipated that means will be found to stabilize the red cell. When this has been accomplished, it will be possible to build up large reserves of whole blood either stored as such or as stocks of separated cells and plasma. Until that time, whole blood must be used shortly after it has been collected or must be converted to plasma or plasma fractions with the loss of the blood cells.

Plasma is much more stable than are the red cells. When stored in the liquid state, some of the proteins deteriorate rapidly although the albumin is remarkably stable. On the other hand, plasma may be stored for years in the dry state with little change in the majority of the protein components. The process of drying is carried out by freezing the plasma and removing the water from the frozen mass in a vacuum. The storage of dried plasma has been standard practice since early in the last war. Indeed, almost 90 per cent of all blood that has been collected by the Red Cross has been converted to dry plasma.

An unexpected and formidable hazard in the use of plasma has become evident in recent years. Plasma transmits the virus of homologous serum hepatitis. A few individuals in the population at any one time carry this virus in their blood. The probability of transmitting the virus in a transfusion of whole blood is small because the recipient usually receives blood from only one donor. In the transfusion of plasma from stores of dried plasma, the hazard is much greater because the plasma from a great number of donors is pooled before drying. A single infected donor may contaminate a large pool. Although serum hepatitis is not often fatal, it is a disease that may incapacitate the patient for many months. It is evident that a high incidence of the disease in an army, as the result of the large-scale use of plasma, could be crippling.

Attempts have been made to kill the virus by irradiation of the plasma pools with ultraviolet light. They have not been successful. Other means of sterilization are under investigation. Quick answers are not to be expected because every test for sterility of a product must be made on human volunteers and because each test requires

observation for six months because of the long and variable incubation period of the disease. Until a means of sterilizing plasma without seriously modifying its physiological characteristics has been found, plasma should only be used for transfusions when no alternative therapy is available.

It is fortunate that an entirely satisfactory alternative material is potentially available in the form of human serum albumin. Methods of fractionating plasma on the large scale were developed and operated during the last war. Albumin and other products of therapeutic value are produced. The albumin is much more stable than whole plasma and may be stored, either in solution or in the dry state. With the addition of a stabilizing agent, albumin solutions may be heated to 60° for ten hours—an effective method of sterilization—without significant deterioration of their therapeutic value. This treatment provides an added precaution against the transmission of viruses, although tests indicate that unheated albumin is also free of the hepatitis virus. Apparently the latter is precipitated or destroyed in the process of fractionation.

Even should means be found to sterilize plasma, it is probable that solutions of albumin will replace plasma in shock therapy. The great stability of albumin and the fact that it can be prepared in solutions of any desired concentration favor its wide use. It is true that the fractionation of plasma for the production of albumin alone is economically unsound because eight therapeutic units of plasma yield only five units of albumin solution. This loss is, however, more than offset not only by the proven sterility of the product but by the valuable by-products of fractionation. Chief among these is the gamma globulin fraction. This has been shown to be prophylactically effective in the prevention or amelioration of measles and infectious hepatitis. During the past six years several million children have received gamma globulin subsequent to a known exposure to measles. The statistics have not yet been analysed but the evidence is strong that the globulin has played a significant role in reducing the mortality in this disease. During the past month much publicity has been given to field trials indicating some prophylactic value of gamma globulin in paralytic poliomyelitis. There is little doubt that the demand for gamma globulin will be heavy during the epidemic season of 1953.

As the products of the fractionation of plasma become more generally available, it is to be anticipated that new uses for the various fractions will be found. Very little plasma is being fractionated at the present time. The processing facilities of the country are operating far below capacity. It is probable that intensive efforts will be made during the coming months to increase production to the limits of capacity. Substantial amounts of albumin should thereby begin to be made available but the demand for gamma globulin is likely to exceed the supply for some time to come.

It has been said that there is no substitute for blood. With this statement there is general agreement. There remains the problem of finding a substitute when neither blood nor its products are available. Those who are responsible for preparedness against atomic warfare are keenly aware of the fact that it will take many years to build up a reserve of plasma or albumin adequate to meet the anticipated need. It has been this dilemma which has led to the intensification of interest in the production of colloidal substances such as dextran and polyvinyl pyrrolidone (PVP) which could be used as temporary substitutes for plasma protein in the emergency treatment of shock. The problems raised in the search for foreign substances that can safely be introduced in quantity into the circulation are complex. They cannot be considered in this brief article. On the other hand, no balanced view of a national blood program is possible without giving the plasma substitutes their proper place.

A number of notable advances made over the past decade have been mentioned. As research continues, further progress can be anticipated in the three major areas of investigation: the preservation of the formed elements of blood, the fractionation of the plasma into its physiologically active parts, and the development of the synthetic plasma volume expanders. As long as an atmosphere of emergency prevails, the National Research Council may be expected to play a continuing role in this program.

Science Documentation

MILTON O. LEE

Chairman, Academy–Council Committee on Publications
President-elect, American Documentation Institute

THE problems of science documentation continue to grow more acute. Our literature continues to grow faster than our stock of devices, methods, and systems for using, organizing, and controlling documentary material. The addition to library shelves of the primary publications of scientific research proceeds more rapidly than the production of indexes, bibliographies, and abstracts needed for the search, selection, and utilization of these primary documents. The desperate solution forced upon scientists and scholars is to ignore all of those portions of the mass of accumulated informational material that are not easily available through the simplest of communication channels. Perhaps this is inevitable, and perhaps the scientist must become reconciled to a situation in which he can expect to be aware of only a small portion of the results of other workers, past and present, even in his own special field of interest.

However, deeply frustrating as the situation is, scholars have not yet fully accepted defeat. There is continual development of devices, techniques, methods, and systems for aiding all of the steps concerned in the process of communication—recording, publication, distribution, storage, classification, indexing, abstracting, search, selection, and reproduction of documentary material. In fact, the number and complexity of the devices and systems developed is now somewhat bewildering. Also, the costs of adequate systems and, in some cases, of devices are so great as to retard their full-scale or even partial adoption. It is seldom realized by the author of a scientific paper that the cost of keeping his contribution in the awareness of other workers, present and future, through indexes, abstracts, and bibliographies alone is likely to be much more than the original cost of publication of his article.

As is usual in such situations, men form societies or organizations to study and to attempt to deal with the problems. Thus we have library associations, general and special, and international organizations for one or another special purpose. Also, to keep the whole group of broad problems in perspective, societies of documentation have been formed in all leading countries of the world. These serve as the nuclei for the study of special and general problems, for the exchange of ideas, for the development of needed devices and methods, and for the formation of principles that underlie the various processes of communication.

The American Documentation Institute is the organization in this country which was formed to carry out these functions and to be concerned with developing counter measures against the encirclement of scholars by the unwieldy mass of their own product. The Institute was founded in 1937, with the aid of Science Service, while that organization was still under the aegis of the National Research Council and located in the Academy–Council building. Watson Davis, Director of Science Service, was a prime mover in the formation of the American Documentation Institute and has served it in various capacities ever since its inception. Ludvig Hektoen was the representative of the National Research Council in the formation of the Institute and was one of the three original incorporators. Thus, the Council has had a direct interest in the Institute and its objectives from its beginning.

These objectives, as set forth in detail in the charter of incorporation of the Insti-

tute, cover very broadly the field that has come to be recognized as documentation. Phrasing these objectives in general terms, the Institute exists for the advancement of the principles and techniques of the communication of recorded knowledge.

Like most general statements, this one requires some elaboration. It is questionable that documentation should concern itself with other than *recorded* knowledge, whether in the form of printed words on paper, pictures, microimages, recordings of sounds, or of systems for communication through the sense of touch. The term *knowledge* implies more than information and identifies documentation as a service to all fields of scholarship. The term *communication* implies much more than is usually associated with it at first thought. Knowledge is likely to be sterile and essentially useless without communication. The communication need not be immediate; therefore, all of the techniques of storage, classification, search, and delivery of informational material are involved. The word *advancement* implies research and study, and these have received emphasis from the beginning. The term *principles* implies that documentation is not entirely an empirical art but that it contains at least some of the elements of a science. The growing group of people who call themselves documentalists have felt increasingly that their field embraces more than techniques and mechanisms. Certain principles have already emerged, and it is likely that many others remain to be developed.

Reproduction of documents in microcopy received early attention by the American Documentation Institute, and it contributed to a number of important pioneer developments. It established the Bibliofilm Service which offered the first general microfilm service covering the collections of the federal libraries. It prompted the development of moderately priced microfilm readers. It initiated an Auxiliary Publication Service through which detailed scientific and other research material of limited use is made available to those needing it in microfilm or photostat form. This can relieve our burdened journals of many pages of material when the expense of publication cannot be justified. The Institute publishes a quarterly journal, *American Documentation,* now in its second year of publication, which serves as the news organ of the Institute and disseminates original articles on documentation.

The American Documentation Institute is the organization in this country which adheres to the International Federation of Documentation, whose primary purpose is to promote international cooperation and united worldwide service in the technical aspects of documentation. The National Research Council is vitally interested and is actively participating in these activities.

The Institute has recently undergone the first major change in its organizational structure since its founding. At a special meeting in September, 1952, a new constitution and by-laws were adopted, and individual membership has been made the basis of its organization and operation. Previously, membership was by organizations and interested agencies which nominated representatives. These representatives elected a board of trustees which selected the officers and managed the affairs of the Institute. Under the new constitution, members elect officers directly and also a council charged with the management of the Institute. Members now pay dues of $10.00 per year, if individuals. Interested organizations may still be institutional members and be represented by delegates, with a membership fee of $50.00 per year.

These changes are designed to accomplish several things. They imply that the Institute stands as the professional organization of documentalists and that such a profession can now be recognized as distinct from that of librarian, publisher, archivist, or technical information specialist. By placing the control and direction of the organization more directly upon the membership, it at once offers them the advantages of such immediate control and also places upon them the direct responsibility for the activities, development, and future of the Institute. It is believed that these sharper responsibilities will be accepted with enthusiasm by the members and that the American Documentation Institute, through its program of research, education, and the exchange of ideas, will increase its usefulness and services to science.

Conference on Marine Cargo Handling and Transport

JOHN S. COLEMAN
Executive Secretary, Committee on Undersea Warfare

AS a result of its explorations in the area of shipping and cargo handling, the Committee on Amphibious Operations of the National Research Council learned that the need for improved cargo transport, rather than being unique to the naval and marine elements of an amphibious operation, is a national problem and widely recognized as such throughout the Government and the maritime industry. Although several groups have been organized, both in this country and abroad, to bring relief to various specific phases of this complex and difficult problem, these efforts for the most part have been handicapped by the limitations of interest, scope, or resources of the individuals and agencies participating. For this reason, the National Research Council was encouraged to hold a conference, on July 7, of senior representatives of industry and Government concerned with the technical and operational phases of the major elements comprising our marine transport systems with the objective of defining the tasks to be solved and to suggest a joint approach toward their solution.

The first half of the conference was devoted to informal presentations by the military, Government, and industry members who described their respective areas of interest and the research and experimental programs being supported. The need for reducing port time of ships and increasing the speed of cargo movement is critical in both commercial and military operations. Various members emphasized the immediate problem of improving the performance of existing, commercial-type facilities and ships. By way of illustration, it was reported that the turn-around time for military shipping has run as high as 75 days and, if the time for requisitioning and related paper work is added, the requisitioning cycle can reach 120 days. Industry reported that excessive time in port, together with high costs of handling cargo and losses from breakage and pilferage, is forcing commercial shippers to make a choice between finding vastly improved methods or being forced out of business by foreign competition. It was emphasized that this situation is critical to national defense since about eighty per cent of all military shipping is commercial-type cargo in commercial hulls and through commercial facilities. In case of war, this shipping would have to be handled by existing types of cargo ships at least for the first two years.

The problems arising from the archaic methods and low efficiency that often characterize marine cargo transport have been receiving attention. A number of groups have been organized in Government and industry, both in the United States and abroad, in an effort to increase the efficiency and yield from existing facilities. In the past five years, a very large program of research, development, and experimentation has been instituted in this country. Brief descriptions of these activities were presented to the conference. Most, if not all, of the experimental work is carried on under the military research programs and is largely aimed at military rather than commercial requirements. Industry has not combined to support a program of its own, and individual concerns have been able to afford only limited investigations.

In the military services, work is being done on all elements of the system with the possible exception of labor and work

methods. Each of these programs is characterized by the area of interest and responsibility of the supporting agency. Thus, the Army Transportation Corps is concerned with the support of overseas forces with particular emphasis on maintaining operations in the event of denial of the use of foreign commercial port facilities. The Navy has particular interest in fleet and advanced base logistic support, again in the absence of well developed terminal facilities at the other end of the line. The Marine Corps has responsibility in the area of assault shipping, especially in over-the-beach operations under combat conditions. Both the Army and the Navy are concerned with depot design and management and the packaging and handling of stores and equipment. In all cases, however, great reliance is placed on the utilization of commercial facilities but only a relatively small part of the experimental work being supported fits in with the needs of commercial operations.

Efforts which have been made in this direction, and which were characterized by industry members at the conference as the "only significant improvement in twenty-five years," include the Maritime Liberty and new Mariner class ships and cargo palletization, introduced by the services in World War II and currently applied in European runs. Even these acknowledged improvements are not universally adaptable at present to commercial requirements and need to be supplemented and supported by other techniques and equipment to constitute an efficient system. Commercial shippers are aware of this need and are seeking assistance and guidance in their planning for new equipment and methods of operations.

Following the presentations, the conference was given over to a discussion of the need for and the best means of achieving cooperation and coordination of plans, requirements, and programs of Government and industry. It was the unanimous opinion of those entering the discussion that a joint group of Government and industry members should be organized with the following objectives: *1)* to facilitate the mutual exchange of experience and data, *2)* to provide objective and unbiased guidance to those instituting new methods or equipment required to be technically and/or operationally compatible with national maritime transport plans, and *3)* to make possible voluntary coordination of experimental activities and studies.

The following representatives of Government and industry attended the conference: Commander J. M. Ballinger, Bureau of Ships; Brig. Gen. F. S. Besson, Army Transportation Corps; L. M. K. Boelter, University of California; Rear Admiral C. M. Bolster, Office of Naval Research; Commander M. A. Borst, Bureau of Supplies and Accounts; W. L. Bull, Military Sea Transportation Service; V. F. Caputo, Munitions Board; W. F. Christmas, National Research Council; Vice Admiral E. L. Cochrane, Maritime Administration; J. S. Coleman, National Research Council; S. D. Cornell, Research and Development Board; J. A. Crothers, Association of Port Authorities; C. R. Denison, Maritime Administration; Capt. E. B. Greey, Bureau of Yards and Docks; Commander C. B. Heck, Bureau of Supplies and Accounts; Louis Jordan, National Research Council; R. G. LeTourneau, R. G. LeTourneau and Company; Commander C. J. Maleny, Military Sea Transportation Service; Col. F. M. McAllister, Marine Corps Equipment Board; J. McCann, R. G. LeTourneau and Company; R. McCluskey, R. G. LeTourneau and Company; Col. H. R. Paige, Marine Corps Development Center; O. W. Pearson, American President Lines; Lt. Col. H. H. Riche, Marine Corps Headquarters; Lt. Col. C. R. Schwenke, Office of Naval Research; Capt. P. W. Snyder, Bureau of Ships; W. P. Spofford, Dravo Corporation; Rear Admiral E. W. Sylvester, Bureau of Ships; Lt. Cmdr. D. W. Thornhill, Office of Naval Research; A. D. Warwick, T. Hogan and Company; and Rear Admiral R. E. Wilson, Military Sea Transportation Service.

SCIENCE NEWS

AUTUMN MEETING NATIONAL ACADEMY OF SCIENCES

The National Academy of Sciences held its autumn meeting at St. Louis, Mo., November 10–12. Approximately forty Academy members were present at the meeting, and there was a large attendance from Washington University and St. Louis University, the hosts to the Academy on this occasion. Philip A. Shaffer of Washington University Medical School served as Chairman of the Committee on Arrangements.

Among the highlights of the meeting were two invited programs, one a symposium on the biochemical and biophysical regulations of cell activity with F. O. Schmitt of Massachusetts Institute of Technology as moderator, and the other a series of papers on neurology arranged in honor of S. Ramon y Cajal in the centennial year of his birth. Dr. Ramon y Cajal, a noted histologist and founder of the Histological Institute at Madrid, was a foreign associate of the National Academy of Sciences. He received the Nobel Prize in medicine and physiology in 1906 for his work on the nervous system which helped the scientific world toward a more detailed study of the brain and its functions.

The Academy awarded the following medals which will be presented to the recipients at the 1953 annual meeting of the Academy: *1*) the Daniel Giraud Elliot Medal for 1949, to Arthur Cleveland Bent in recognition of the seventeenth volume in his series on the Life Histories of North American Birds; 2) the Kovalenko Medal for 1952, to Alfred Newton Richards, former President of the National Academy of Sciences, in recognition of the outstanding contributions to medical science he has made over a period of half a century and for his great ability as an investigator and as a research executive and administrator; and 3) the Mary Clark Thompson Medal for 1952, to Lloyd William Stephenson of the U. S. Geological Survey, in recognition of his studies on the stratigraphy and paleontology of the Upper Cretaceous deposits of the Atlantic and Gulf Coastal Plains of the United States.

The ninetieth annual meeting of the National Academy of Sciences will be held in Washington April 27–29, 1953.

ACADEMY–COUNCIL STAFF APPOINTMENT

Detlev W. Bronk, President of the National Academy of Sciences, has announced the appointment of S. Douglas Cornell as Executive Officer of the National Academy of Sciences–National Research Council. Dr. Cornell assumed his duties on November 20.

The appointment of Dr. Cornell provides a full-time staff member to assist the President of the Academy and the Chairman of the Research Council in the administration of Academy–Council affairs. Dr. Cornell will maintain frequent and continuous contact with the divisions, offices, and boards of the Research Council and will participate in the over-all planning of Academy–Council programs.

Training and experience have qualified Dr. Cornell for his new assignment. He received his undergraduate and graduate training at Yale University, obtaining the Ph.D. degree in physics in 1938. Upon completion of his academic studies, he accepted a position as development physicist at Eastman Kodak Company, where he remained until entering the Navy as a commissioned officer in 1942. During the war, he was assigned to the Office of the Chief of Naval Operations where he worked on the development of new weapons and training equipment.

When Dr. Cornell returned to civilian status late in 1946, he joined the staff of the Planning Division of the Research and Development Board, Department of Defense. In 1949, he was made Director of the Planning Division, a position which he held until accepting his current appointment with the Academy–Council.

ACADEMY MEMBERS AWARDED NOBEL PRIZE

Selman A. Waksman, microbiologist at the College of Agriculture, Rutgers University, has been awarded the Nobel Prize for Medicine and Physiology for his work in the discovery in 1944 of streptomycin, the first effective antibiotic found for use against tuberculosis.

Two other members of the National Academy of Sciences, Edward Mills Purcell of Harvard University and Felix Bloch of Stanford University, have been awarded the Nobel Prize in Physics for their development of new methods for nuclear magnetic precision measurements and their discoveries in this field. Dr. Purcell and Dr. Bloch each led a group of researchers at Harvard and Stanford, respectively. The two groups worked independently of each other but published at about the same time papers on an important discovery in their mutual field.

The prizes will be presented to Dr. Waksman and to Dr. Purcell and Dr. Bloch in Stockholm on December 10.

SURVEY OF PROBLEMS AFFECTING SCIENCE

The National Research Council is undertaking a survey of problems affecting the pattern of scientific activity in the United States. The survey, which will be conducted by an ad hoc committee of the Council, will attempt to identify the problems which may have an important effect upon the continued vitality of scientific research and to consider means for determining factually the nature of these effects, including a review of data now available and efforts now under way to make such determination.

The survey will consider factors affecting the continued production of new knowledge regarding the laws of nature. The impact of this new knowledge on the economy of the country, public welfare, and the national defense will be of concern to the survey only as they affect conditions conducive to the production of new knowledge. It is hoped that the survey will lead to recommendations for corrective measures where the solution of problems is understood and to recommendations for further study where solutions are not apparent.

Charles I. Campbell has been loaned to the National Research Council by the Atomic Energy Commission to serve as executive secretary of the committee.

HOUSING AND BUILDING IN HOT-HUMID AND HOT-DRY CLIMATES

A Correlation Conference on Housing and Building in Hot-Humid and Hot-Dry Climates was conducted by the Building Research Advisory Board in Washington, November 18 and 19. W. R. Woodrich of the University of Texas served as chairman of the Conference.

The Conference had the following objectives: *1*) to present a comprehensive review of building technology pertinent to these climates; 2) to discuss the work currently in progress; and 3) to identify those areas still in need of research.

The proceedings of the Conference will be published.

COORDINATION OF FELLOWSHIP PROGRAMS

In accordance with recommendations of the Fellowship Policy Committee of the National Research Council made at a meeting on May 16, coordination of the diverse fellowship programs of the Council has been planned for the coming year. It was felt that such a program would simplify administrative procedures in the Council, would assure each candidate the maximum opportunity for consideration, and would reduce the number of letters of endorsement required.

A single brochure detailing administrative procedures, qualifications of candidates, and areas of interest of the supporting agencies of ten research fellowships has been prepared. A single application form has been devised for each of the fellowships.

These fellowships provide special opportunities for advanced study and experience in fundamental research. They are intended for young men and women of unusual promise and ability, in the early stages of preparation for an investigative career.

NATIONAL SCIENCE FOUNDATION FELLOWSHIPS

The Fellowship Office of the National Research Council has announced that it is accepting applications for National Science Foundation Fellowships until January 5, 1953. These fellowships, open to citizens of the United States, are available at all levels of study in the mathematical, physical, medical, biological, and engineering sciences, including physical anthropology, experimental psychology, physical geography, and interdisciplinary fields. Postdoctoral fellowships, as well as first-year fellowships, intermediate fellowships, and terminal-year fellowships for predoctoral study, are awarded.

Further information and application blanks may be obtained from the Fellowship Office, National Research Council, 2101 Constitution Avenue, Washington, D. C.

STUDY OF TECHNIQUES FOR SELECTION OF FELLOWSHIP RECIPIENTS

Calvin W. Taylor, Director of Research, Office of Scientific Personnel, is engaged in an extensive program to improve the techniques of selecting fellows for the National Science Foundation fellowship program. Dr. Taylor is being assisted in this work by the following advisory committee: W. J. Brogden, University of Wisconsin, *Chairman;* Frederick Mosteller, Harvard University; Robert L. Thorndike, Columbia University; David C. McClelland, Wesleyan University (Connecticut); John M. Stalnaker, Association of American Medical Colleges; and Dael Wolfle, Commission on Human Resources and Advanced Training.

OFFICE OF INTERNATIONAL RELATIONS

Robert L. Champion, President of the Cooperative Research Foundation, Palo Alto, Calif., and United States Scientific Liaison Officer for the National Research Council of Brazil, has been appointed Assistant Director of the Office of International Relations of the Academy–Council. Mr. Champion will devote about half of his time to the work of the Office until the end of this year, when he will assume his new position on a full-time basis.

Mr. Champion obtained his academic training at the University of Illinois where he specialized in engineering, architecture, and industrial education. He received his B. S. and M. S. degrees from that institution in 1935 and 1936. During World War II, he served in the U. S. Naval Reserve and, upon return to inactive duty, became Director of the Landing Aids Experiment Station at Arcata, Calif. From 1948–51, he was professor of structural engineering in the Instituto Tecnologico da Aeronautica in Rio de Janeiro.

RAROIA ATOLL RESEARCH TEAM

An intensive, ecological survey of Raroia, a Polynesian atoll sixteen degrees south of the Equator, has been completed by a seven-man research team of specialists in the geological and biological sciences (see NEWS REPORT, Vol. II, No. 3). This is the third project in a five-year program of atoll research sponsored by the Pacific Science Board of the National Academy of Sciences–National Research Council and supported principally by a grant from the Office of Naval Research, with additional grants from "George Vanderbilt Collections" and the American Museum of Natural History. The expedition received material assistance from the National Museum, the Academy of Natural Sciences in Philadelphia, the California Academy of Sciences, the Bishop Museum, the University of Hawaii, and the government of French Oceania at Tahiti.

The expedition obtained quantities of field data and specimens from Raroia, and aerial photogrammetric maps were made of the atoll. The collections indicate rich biota comparable to those of Bikini and Arno and extend eastward the known range of many species of Pacific island plants and animals. Work of the research team on Raroia and observations in the Fiji, Tonga, Cook, and Society Islands have led the team to favor the Darwin–Dana theory of the origin of atolls, which holds that they are formed by upward growth of corals and algae around a reef-encircled, gradually subsiding volcanic island. Many stages in this sequence, from reef-fringed volcanoes like Tahiti to characteristic atolls like Raroia, were examined by the team.

NEW ASSIGNMENT FOR MINERALS AND METALS ADVISORY BOARD

The Minerals and Metals Advisory Board of the Academy–Council has been asked by the Defense Materials Procurement Agency to guide research and development activities required to increase the supply of materials needed in the defense mobilization effort. In addition to providing advice on the initiation of research, the Board will monitor research projects supported by the Defense Materials Procurement Agency.

To carry out the new assignment, the Board has retained the services of James R. Cudworth as Assistant Executive Director. Dean Cudworth is on leave from his post in the College of Engineering, University of Alabama. He has had extensive experience in the field of minerals engineering.

The Minerals and Metals Advisory Board itself has recently increased its membership by the addition of two engineers: John R. Townsend, Bell Telephone Laboratories, Inc., and James H. Critchett, retired Vice-President, Union Carbide and Carbon Research Laboratories, Inc.

CONFERENCE ON ELECTRICAL INSULATION

The Conference on Electrical Insulation of the Division of Engineering and Industrial Research held its annual meeting at Lenox, Mass., October 2–4, under the chairmanship of A. R. von Hippel, Director of the Laboratory for Insulation Research, Massachusetts Institute of Technology. Thirty papers were presented, and six round-table discussions were conducted. The three-day meeting had a record attendance of 310.

A letter of felicitation, signed by a large number of those attending the meeting, was sent to J. B. Whitehead of The Johns Hopkins University on the occasion of his eightieth birthday. It was Dr. Whitehead, serving as Chairman from 1922 to 1938, who, more than anyone else, was responsible for the development of the Conference into the functioning organization it is today.

The Executive Committee authorized a reprinting of the Conference publication, *Digest of Literature on Dielectrics.* This book, a composite volume containing the annual reviews of literature in this field for the years 1936–46, has enjoyed a continuing demand since its publication in 1949, and its first printing is now exhausted.

Conference officers for 1952–53 are D. W. Kitchin, Simplex Wire and Cable Company, *Chairman;* D. A. McLean, Bell Telephone Laboratories, Inc., *Vice-Chairman;* A. H. Sharbaugh, General Electric Company, *Secretary.*

LUNG CANCER CONFERENCE

The following recommendations were made by the Lung Cancer Conference, held at Chocorua, N. H., September 4 and 5, under the sponsorship of the American Cancer Society, one of the cooperating societies of the National Research Council:

1) A permanent committee, including one or more representatives from each of the several pertinent special fields of basic and applied science, should be established to consider all aspects of the problem of lung cancer. The committee would have the following objectives: *a)* to provide for rapid exchange of information among men in various special fields and to provide contacts for cooperation on research projects; *b)* to evaluate progress in research and suggest and promote research along new lines as they become apparent; and *c)* to suggest organized programs for the control of lung cancer.

2) Fundamental animal research should be continued and expanded under conditions to be approved by the permanent committee or a subcommittee appointed for that purpose.

3) A demonstration-type project embracing the analysis of all phases of lung cancer control and the collection of data for epidemiological research should be inaugurated.

4) The American Cancer Society and the National Cancer Institute should cooperate with the Division of Chronic Diseases and Tuberculosis of the Public Health Service, the National Tuberculosis Association, and other interested groups in X-ray screening programs.

APPOINTMENTS IN DIVISION OF PHYSICAL SCIENCES

The following persons have been appointed members of the Division for three-year terms: Frederick V. Hunt, Harvard University (representing the Acoustical Society of America); Thomas H. Johnson, Atomic Energy Commission (liaison member); Emanuel R. Piore, Office of Naval Research (member-at-large); and Francis W. Reichelderfer, U. S. Weather Bureau (representing the American Meteorological Society). The Division now has twenty-four members representing eight cooperating societies, four liaison members, and three members-at-large.

APPOINTMENTS IN DIVISION OF MATHEMATICS

D. C. Spencer, professor of mathematics at Princeton University, has succeeded Marshall Stone as Vice-Chairman of the Division of Mathematics for the year 1952–53. Dr. Stone had served in this position since the Division was organized early in 1951.

Stewart S. Cairns of the University of Illinois, Richard Courant of New York University, and Marston Morse of the Institute for Advanced Study have been appointed members-at-large of the Division for three-year terms. E. J. McShane, University of Virginia, and R. L. Wilder, University of Michigan, have been appointed to three-year terms as members of the Division, representing the American Mathematical Society. Capt. Wendell Roop, Anchorage Farm, Sewell, N. J., has been reappointed to a three-year term as representative of the Division of Engineering and Industrial Research of the National Research Council.

At the annual meeting of the Division, three new divisional committees were set up: the Committee on Revolving Fund for Publication of Mathematical Tables, the Committee on Members, and the Committee on Regional Development of Mathematics. The Fellowship Committee of the Division was reorganized to have a periodically revolving membership.

SURVEY OF RESEARCH AND TRAINING IN APPLIED MATHEMATICS

The Committee on Training and Research in Applied Mathematics, activated under a contract between the National Academy of Sciences and the National Science Foundation, with the cooperation of the Office of Naval Research, the Office of Ordnance Research of the Army, and the Office of Scientific Research of the Air Force, is conducting a survey to determine the nature and extent of research in applied mathematics being carried out by government, universities, and industry.

The Committee, at its first meeting on October 23, discussed at some length its policies and the aims of the survey. As part of the survey, the Committee will report on training and teaching in applied mathematics and will indicate the areas which are not receiving adequate support. A conference on training and research needs in applied mathematics will be held during the spring of 1953 to consider the findings of the survey and to examine the future of research and teaching in this field.

F. Joachim Weyl, Head of the Mathematics Branch, Office of Naval Research, is acting as full-time investigator for the survey.

SURVEY OF LITERATURE OF DENTAL CARIES

The National Research Council has just published a *Survey of the Literature of Dental Caries* (see New Publications, p. 100). This *Survey* represents ten years of continuous work on the part of the Council's Committee on Dental Health, its consultants, and the authors.

Contributors to the volume are Charles F. Bodecker, Columbia University; Gerald J. Cox, University of Pittsburgh; Sidney B. Finn, University of Alabama; James H. Shaw, Harvard University; and Guttorm Toverud, Dental School of Norway.

The survey was prepared for the Food and Nutrition Board of the Council by the Committee on Dental Health, which is composed of P. C. Jeans of the University of Iowa, *Chairman*, C. A. Elvehjem of the University of Wisconsin, and C. G. King of the Nutrition Foundation.

REPORT ON SPACE AND PLANNING

The Building Research Advisory Board of the Academy–Council met with forty-seven Government and private architects and specialists in space and planning to discuss means for conserving materials and cost through greater efficiency in design. A study of planning methods used by Government agencies was made to compare with private practices.

The advisory groups agreed on many general design principles and approved specific recommendations to guide designers. Research was recommended to establish criteria for unit areas in various building types and to develop data needed in planning special-purpose work areas where equipment layout affects operating efficiency. The recommendations on space and planning covered the following subjects: a formula for plan efficiency ratio, definitions of building areas, modular coordination, the life probability of buildings, maximum unit floor areas, and operating efficiency.

The Board's *Study on Conservation in Building Construction* (see New Publications, p. 100) discloses that the planning of space requirements within a building affect the cost of the building more than any other factor. The "Report on Space and Planning," one of the eight sections of the *Study,* recommends reductions in standard ceiling heights and changes in planning standards to achieve conservation without impairing the adequacy of buildings.

An appendix at the end of the "Report" presents information on the architectural design practices of five Government agencies as compared with conventional private practice. Specific data are given on subjects such as design criteria used by the Government; space, loads, and fire protection required for warehouses; rentable areas and plan efficiency ratios for office buildings.

AGRICULTURAL RESEARCH INSTITUTE

The first meeting of the newly organized Agricultural Research Institute was held at the National Academy of Sciences on October 16. Attendance of approximately one hundred industrial, governmental, and academic scientists included members of the Agricultural Research Institute and the Agricultural Board of the National Research Council.

W. E. Krauss, Chairman of the Agricultural Board, reviewed the current activities of the Board as a background for further development of activities in conjunction with the Institute. Chairmen of committees on animal nutrition, animal health, feed composition, maize preservation, and plant ecology presented reports.

Officers and a board of governors were elected for the Agricultural Research Institute, as follows: Roy C. Newton, Swift and Company, *President;* Paul D. V. Manning, International Minerals and Chemical Corporation, *Vice-President;* B. S. Clark, American Can Company, *Secretary;* E. W. Adams, Standard Oil Company of Indiana; R. M. Bethke, Ralston Purina Company; Walter Blake, Pillsbury Mills, Inc.; Victor Conquest, Armour and Company; Oliver DeGarmo, Monsanto Chemical Company; E. L. Demmon, Society of American Foresters; R. P. Dinsmore, Goodyear Tire and Rubber Company; Alexander Frieden, Pabst Brewing Company; G. F. Geissler, U. S. Department of Agriculture; H. E. O. Heineman, Pet Milk Company; J. R. Holbert, Funk Brothers Seed Company; C. B. Hutchison, Nevada Agricultural Experiment Station; J. H. Jensen, North Carolina Agricultural Experiment Station; E. P. Johnson, American Veterinary Medical Association; Norman F. Kennedy, Corn Industries Research Foundation; John Knowles, Libby, McNeill and Libby; A. A. Nikitin, Tennessee Corporation; H. H. Plough, American Genetic Association; R. R. Poynor, International Harvester Company; K. S. Quisenberry, American Society of Agronomy; C. L. Rumberger, H. J. Heinz Company; B. T. Shaw, U. S. Department of Agriculture; Howard C. Spencer, Dow Chemical Company; A. A. Spielman, Connecticut Agricultural Experiment Station; N. J. Volk, Indiana Agricultural Experiment Station; C. G. Weigand, Eli Lilly and Company; and Claude L. Welch, National Cotton Council.

The Agricultural Board met, on October 17, to discuss the new fields of activity proposed by the Institute.

STANDARD VALUES IN BLOOD

The Committee on the Handbook of Biological Data of the Division of Biology and Agriculture has announced the publication of *Standard Values in Blood*, the first fascicle of the Handbook (see New Publications, p. 100).

The fascicle presents in tabular form standard values in blood for man and other vertebrates, arranged under the following sections: Physical Properties; Coagulation Phenomena; Blood Groups; Erythrocytes and Hemoglobin; Leukocytes; Blood and Bone Marrow Cells; Water, Carbohydrates, Lipids, and Proteins; Amino Acids and Non-Protein Nitrogen Compounds; Phosphorus and Sulfur Compounds; Vitamins, Hormones, and Enzymes; Electrolytes; Minerals, Gases, and Acid-Base Values; Effects of Radiation and Storage; Effective Blood Levels of Therapeutic Agents.

The data contained in the Handbook have been supplied by over six hundred investigators in biology and clinical medicine. The quantitative data are supplemented by essential information on nomenclature, units, methods and conditions of measurement, investigated strains, and theories. A bibliography containing the name of the contributor for each value is appended.

AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES

The third campus meeting for biologists, sponsored by the American Institute of Biological Sciences, was held at Cornell University, September 8–10. It was the largest gathering of biologists ever assembled in an American university setting. The general program listed 1,392 papers, of which one hundred were read by title. Forty-seven states, the District of Columbia, Alaska, Hawaii, and twenty-three foreign countries were represented. The 1953 meeting of the American Institute of Biological Sciences will be held at the University of Wisconsin in September.

INTERNATIONAL RELATIONS

SCIENTIFIC UNIONS

ICSU

The Sixth General Assembly of the International Council of Scientific Unions was held in Amsterdam, October 1–3, at the invitation of the Royal Netherlands Academy of Sciences. The General Assembly was preceded by the fourth meeting of the Executive Board on September 30. The United States was represented by an official delegation of eight persons, as listed in the previous issue of NEWS REPORT. The forty-one delegates in attendance represented eighteen countries and eleven international scientific unions. The following were the more important items discussed at the General Assembly:

1) Possible Reorganization of ICSU. The President of the General Assembly, Alexander von Muralt, pointed out that the present organization of ICSU would be completely inadequate in a few years because of the rapid increase in the number of scientists and of the unwieldy structure of some of the present unions. The General Assembly discussed the possibility of reorganizing ICSU into an international council of scientific federations. The unions as now constituted, and some associations which might become unions, could group themselves into broad federations such as a Federation of Chemical Sciences, a Federation of Earth Sciences, etc. Such reorganization would permit a union to have affiliations with more than one federation in accordance with its broad scientific interests.

2) *Admission of New Unions.* The International Mathematical Union, which was formally established in September, 1951 and already has twenty-three adhering nations, was unanimously accepted as a member of ICSU.

The application for membership submitted by the International Union of Biochemistry was turned down by the Executive Board of ICSU on the basis of the fact that the field of biochemistry was covered by the Section on Biochemistry of the International Union of Pure and Applied Chemistry and that the establishment of a separate union for biochemistry would tend to splinter an existing union. Despite the negative action taken by the Executive Board, the General Assembly agreed that one of its members should work with the International Committee of Biochemistry and the International Union of Pure and Applied Chemistry in an effort to find a satisfactory solution to the problem presented. A. V. Hill, the new General Secretary of ICSU, was selected to perform this liaison function.

3) *Relationship of ICSU to UNESCO.* It was pointed out that there might be further decreases in the annual subventions of UNESCO to ICSU leading to the eventual elimination of such subventions and that, consequently, the need existed for direct increases in union dues. It was recommended that every effort be made to secure direct support for special projects which are of interest to ICSU, the individual unions, and the commissions and joint commissions of the unions. The General Assembly also recommended that there should be a higher proportion of scientists on the national delegations to the General Assembly of UNESCO.

4) *Adoption of New Statutes.* After discussion and redrafting by a committee appointed by the President of the Assembly, a new set of statutes was adopted. Although numerous "housekeeping" changes appear in the new statutes, basic changes are few; they are as follows: *a*) The new office of Treasurer has been established (the General Secretary formerly performed the duties of both secretary and treasurer). *b*) The relationship of the Bureau and the Executive Board to the General Assembly was clarified: they are responsible to the General Assembly. Accordingly, the members of the Bureau and Executive Board have no vote in the General Assembly as individuals. *c*) Voting procedures in the General Assembly were changed by removing the distinction between administrative and scientific questions. Henceforth, each national member (adhering country) has one vote, each scientific member classed as a "general union" has three votes, and each scientific member classed as a "specialized union" has two votes on all questions brought before the General Assembly.

5) *National Dues.* The General Assembly voted to increase the annual dues of each country adhering to ICSU from the present level of 500 gold francs to 600 gold francs, commencing in 1954.

6) *New National Members.* The following countries were accepted as national members: Israel, Thailand, Spain, and the German Federal Republic.

7) *Election of Officers.* The following officers were elected to serve until the next General Assembly: B. Lindblad (Sweden), *President;* H. Solberg (Norway) and E. Herbays (Belgium), *Vice-Presidents;* A. V. Hill (United Kingdom), *General Secretary;* W. A. Noyes, Jr. (United States), *Treasurer;* J. Peres (France) and Naoto Kameyama (Japan), *members of Bureau.* Professor von Muralt (Switzerland), immediate past-president, will remain a member of the Bureau.

8) *Next General Assembly.* An invitation from the Norwegian Academy of Sciences and Letters to hold the seventh General Assembly in Oslo in 1955 was accepted.

In concluding this account of the General Assembly, it is appropriate to summarize the major recommendations made by the delegation which represented the United States on this occasion:

1) In view of the outstanding success of ICSU and its constituent unions in stimulating scientific research and in maintaining international scientific services of value to this nation, the United States should take an active and constructive part in the activities of the Council and its unions.

2) The legislative ceiling set by Congress in 1935, which limits United States participation in ICSU and its constituent unions to $9,000 annually, should be raised to $100,000, or removed, to permit adequate United States participation in these international organizations. Action on raising or eliminating the existing ceiling should be taken without delay since the United States is in danger of defaulting on its membership dues before the end of the current fiscal year.

3) Every effort should be made to strengthen the financial structure of ICSU and its unions, thereby eliminating their dependence upon UNESCO subventions. However, downward adjustments in UNESCO subventions should be made only as ICSU and its unions revise their statutes and collect sufficient funds from member countries to finance their own programs.

URSI

The Australian Government, the University of Sydney, and Australian industrial organizations were hosts to the Tenth General Assembly of the International Scientific Radio Union (URSI) in Sydney, August 11–25. More than 300 delegates, representing fifty-five countries, attended the sessions. The composition of the United States delegation was reported in Vol. II, No. 4 of NEWS REPORT.

The following were among problems discussed at the Assembly: the international exchange of radio standards; mechanism for the transmission of tropospheric radio signals over great distances with regard to the meteorological mechanisms involved; long-distance ionospheric propagation; cooperative measures to fill the gaps in knowledge concerning the world-wide distribution, intensity, and frequency characteristics of terrestrial radio noise; radio astronomy; intergalactic hydrogen line emissions; antennas and wave guide; and electronics.

Preparations for the Geophysical Year 1957–58 were also discussed at the General Assembly. A committee was appointed to advise the URSI representatives on the Geophysical Year Committee of the International Council of Scientific Unions. L. V. Berkner, President of Associated Universities, Inc., is a member of this committee.

The following officers of the Union were elected: J. H. Dellinger (United States), E. V. Appleton (United Kingdom), and B. van der Pol (Switzerland), *Honorary Presidents;* P. Lejay (France), *President;* D. F. Martyn (Australia), C. R. Burrows (United States), and B. D. H. Tellegen (Netherlands), *Vice-Presidents;* E. Herbays (Belgium), *Secretary;* and C. Manneback (Belgium), *Treasurer.* Dr. Burrows, Dean of Engineering at Cornell University and Chairman of the United States delegation, was elected International President of Commission II and was appointed a member of the Joint Commission on Radio Meteorology and of the Joint Commission on Solar and Terrestrial Phenomena. L. C. van Atta, Hughes Aircraft Company, was elected International President of Commission VI. H. G. Booker, Cornell University, was appointed a member of the Joint Commission on Radio Meteorology.

The Eleventh General Assembly of URSI will be held in the Netherlands in 1954.

IAU

The International Astronomical Union held its Eighth General Assembly in Rome, September 4–13. There were approximately 500 delegates, representing thirty-five countries, in attendance; fifty-six American astronomers participated in the meeting.

The General Assembly voted to raise the unit of national subscription to the Union from 500 to 650 gold francs. It accepted the invitation of Ireland to hold its next meeting in Dublin in 1955.

The new officers of the Union for the period 1952–55 are the following: Otto Struve (United States), *President;* V. A. Ambartzumian (U.S.S.R.), P. Swings (Belgium), R. v. d. R. Woolley (Australia), E. Rybka (Poland), and A. Couder (France), *Vice-Presidents;* and P. Th. Osterhoff (Netherlands), *General Secretary.* The retiring president, B. Lindblad (Sweden), and general secretary, B. Strömgren (Denmark), remain on the Executive Committee of the Union in a consultative capacity.

IUTAM

Three hundred and twenty scientists and engineers from twenty-two countries met at Istanbul, August 20–28, for the Eighth International Congress on Theoretical and Applied Mechanics. A total of 335 papers was presented in the fields of fluid mechanics; elasticity and plasticity; the mechanics of solids; statistical mechanics, thermodynamics, and heat transfer; and the mathematics of physics and mechanics and methods of computation. The United States was represented by a delegation of ninety-seven persons, including more than thirty members of the American Society of Mechanical Engineers.

These international congresses are arranged by a self-perpetuating committee of scientists from many countries. The following are the United States members of the committee: Hugh L. Dryden, National Advisory Committee for Aeronautics; J. C. Hunsaker, Massachusetts Institute of Technology; Theodore von Karman, Air Force Scientific Advisory Board; and S. Timoshenko, Stanford University. It was decided that the ninth congress would be held in Brussels in 1956.

The International Union of Theoretical and Applied Mechanics, organized in Paris in 1946, held its third General Assembly at Istanbul on August 21 and 26. All of the delegates from the United States National Committee for Theoretical and Applied Mechanics were present: H. W. Emmons, Harvard University; N. J. Hoff, Polytechnic Institute of Brooklyn; R. D. Mindlin, Columbia University; M. G. Salvadori, Columbia University; and R. J. Seeger, National Science Foundation. Dr. Dryden, Dr. Hunsaker, and Dr. Timoshenko, all "personal members" of the General Assembly, also attended.

The following officers of the Union were elected to serve for a four-year period beginning November 1, 1952, except as noted: Hugh L. Dryden (United States), *President;* J. Peres (France), *Vice-President;* F. H. van den Dungen (Belgium), *Secretary* (1952–54); and G. Temple (United Kingdom), *Treasurer.* The fourth General Assembly of the Union will be held in Brussels in July, 1954.

The General Assembly announced that a symposium on cosmical gas dynamics would be held in cooperation with the International Astronomical Union, at Cambridge, England, July 13–18, 1953. Persons desiring to participate should communicate with Prof. J. M. Burgers, Laboratorium voor Aero-enhydronamica der Technische Hoogeschool, Nieuwe Laan 76, Delft, Netherlands. Plans for a symposium on photoelasticity and photoplasticity, to be held in Brussels in 1954, were also announced.

INTERNATIONAL GEOLOGICAL CONGRESS

The Nineteenth International Geological Congress was held in Algiers, September 8–13, under the presidency of Charles Jacob, Director of the Laboratory of Geology at the Sorbonne. Emmanuel de Margerie, honorary professor at the University of Strasbourg, who attended the first congress, held in Paris in 1878, was elected Honorary President of the Congress. M. M. Dalloni, of the University of Algiers, served as chairman of the organizing committee and R. L. Laffitte, also of the University of Algiers, was general secretary of the organizing committee and of the Congress.

Approximately 1,200 persons, including delegates from seventy countries, participated in the Congress. The United States was represented by an official delegation of eleven persons, under the chairmanship of William E. Wrather, Director of the Geological Survey (see NEWS REPORT, Vol. II, No. 4).

Technical papers were presented in ninety-three scientific sessions, which were organized into fifteen sections. Features of the Congress included numerous excursions covering every aspect of North African geology in Algeria, Morocco, and Tunisia before the Congress and in French West Africa afterwards. The members of the Congress were presented with regional monographs describing in detail the geology of the regions visited and with a 1:2,000,000 geological map of North Africa.

The Government of Mexico extended an invitation to hold the twentieth Congress in that country in 1956.

CONGRESS OF ANTHROPOLOGICAL AND ETHNOLOGICAL SCIENCES

The Fourth International Congress of Anthropological and Ethnological Sciences was held in Vienna, September 1–8. Approximately 800 anthropologists, prehistorians, and ethnologists from nearly forty countries participated in the scientific sessions and the excursions that had been arranged by the Austrian organizing committee headed by the Rev. Wilhelm Schmidt, professor emeritus of the University of Vienna. William N. Fenton, Executive Secretary of the Division of Anthropology and Psychology of the National Research Council and the official United States delegate to the Congress, served as one of the vice-presidents of the meeting.

The following United States anthropologists were chosen to serve as members of the United States committee on the Permanent Council of the Congress: F. Eggan, University of Chicago; M. J. Herskovits, Northwestern University; F. G. Rainey, University of Pennsylvania; and H. B. Collins, Jr., University of Washington. Alfred Kidder II of the University of Pennsylvania and Dr. Fenton were named secretaries of the committee.

The next Congress will be held in Philadelphia in 1956. Dr. Rainey was named President of the Congress, and Dr. Fenton and Dr. Kidder were named Secretaries General. This three-man group constitutes the nucleus of the organizing committee for the 1956 Congress.

INTERNATIONAL UNION FOR THE PROTECTION OF NATURE

The Venezuelan Society of Natural History, with the assistance of the Venezuelan Government, was host to the Third General Assembly of the International Union for the Protection of Nature at Caracas, September 3–9. This conference, the first of its kind to be held in the New World, was attended by 194 delegates and observers from twenty-six countries. The National Research Council was represented by Harold J. Coolidge, a vice-president of the Union, and Ira Gabrielson, Chairman of the Union's Commission on Conservation Education (see NEWS REPORT, Vol. II, No. 4).

The meetings were divided into technical sections at which there were discussions on the relationship between the development of hydroelectric energy and the conservation of natural resources, the problems of the preservation and restoration of wildlife in semi-arid regions of Central and South America, the preservation of endemic species of flora and fauna on small islands with special reference to the Caribbean, and the problem of bush fires and the effect of the use of fire as an aid to agriculture. Meetings were also devoted to the work of the Union, with reports from the Secretary General as well as from the Commissions on Conservation Education, on Public Information, and on the Survival Service. The General Assembly enlarged the scope of the Union's activities in the fields of ecological research and in the use of mass media and visual aids.

The fourth General Assembly of the Union will be held in Denmark in 1954.

INTERNATIONAL GRASSLAND CONGRESS

Forty-nine countries other than the United States were represented at the Sixth International Grassland Congress, held August 17–23 under the sponsorship of the United States Government and the Food and Agriculture Organization of the United Nations, at Pennsylvania State College. Attendance included about 300 scientists and grassland specialists from other countries and more than 1,200 from the United States. P. V. Cardon, formerly Administrator of the Agricultural Research Administration of the U. S. Department of Agriculture, served as chairman of the organizing committee of the Congress.

More than 250 scientific papers were presented and discussed, affording scientists from virtually all free countries of the world an opportunity to exchange knowledge about research pertaining to grassland farming and to consider how such knowledge could be more widely applied throughout the world in maintaining and increasing the productivity of the soil to feed and clothe the world's increasing population.

The specific topics covered in sectional meetings during the week included plant breeding, pasture and range management, ecology and physiology, soil management and fertilization, seed production and distribution, soil and water conservation, harvesting, preservation and feeding of forage, machinery, research procedures, and improvement and management of tropical grasslands.

One day of the Congress was devoted to a Grassland Field Day on which participants in the Congress and approximately 15,000 farmers from Pennsylvania and nearby states had an opportunity to see a wide variety of grassland farming machinery and equipment in operation under actual field conditions.

Immediately following the Congress, grassland tours were conducted through the Northeast, Midwest, South, and West to give grassland experts from other countries an opportunity to see examples of scientific development and research in grassland farming and how it is applied under conditions similar to those in their own countries.

The Seventh International Grassland Congress will be held in New Zealand in 1956.

RECORD OF MEETINGS

September

2 American Institute of Biological Sciences Advisory Committee on Physiology to the Office of Naval Research, *New Orleans, La.*
Committee on Fellowship Selection Techniques

4–6 Symposium on Microseisms, *Harriman, N. Y.*

5 Committee on Foot Protection

7 Committee on Plant and Crop Ecology (Central Committee), *Ithaca, N. Y.*

8–10 American Institute of Biological Sciences, *Ithaca, N. Y.*

9 Panel on Naval Armor

11 American Institute of Biological Sciences Advisory Committee on Biology to the Office of Naval Research, *Ithaca, N. Y.*

12 Ad hoc Committee on Survey of Vegetable Production under Military Command
Committee on Milk Production, Distribution, and Quality, *Cleveland, Ohio*

15 Subcommittee on Animal Reservoirs and Vectors of Disease
Subcommittee on Food Supply
Subcommittee on Waste Disposal

15–16 Panel on Materials for Use at Elevated Temperatures

16 Building Research Advisory Board Advisory Panel on Plumbing
Committee on Sanitary Engineering and Environment

17 Conference on Differential Agglutination of Erythrocytes

19 Infra-red Absorption Spectra Committee

23 Conference on Enzymatic Debridement Agents in the Treatment of Burns, *New York City*
Task Group for a Study of Interagency Construction Council

24 Panel on Nickel Conservation

26 Panel on Lateritic Ores
Subcommittee on Test Methods, *Chicago, Ill.*

29 Subcommittee on Dermatology

29–Oct. 1 Conference on Structure and Properties of Solid Surfaces, *Lake Geneva, Wis.*

30 Ad hoc Committee on the Uses of Gamma Globulin
Subcommittee on Plant Diseases and Pests

30–Oct. 1 Subcommittee on Shock

October

1 Committee on Globes

2–4 Conference on Electrical Insulation, Annual Meeting, *Lenox, Mass.*

3 Ammunition Loader Panel, *Chicago, Ill.*
Committee on Flame and Thermal Protective Combat Clothing

4 Ad hoc Coral Atoll Advisory Group
Division of Biology and Agriculture, Executive Committee

6 Committee on Highway Safety Research
Subcommittee on Venereal Diseases

7 Medical Sciences Information Exchange, Policy Committee

8 Committee on Hazards of Ammonium Nitrate Transportation
Subcommittee on Sterilization of Blood and Plasma
Task Group for a Study of Interagency Construction Council

October

9 Committee on Disaster Studies
Committee on Wool-Type Fabrics and Blends, *New York City*
Sub-Panel on Fine Particles, *Pittsburgh, Pa.*

10 Ad hoc Committee on Survey of Advisory Systems for Basic Research
Ammunition Loader Panel, *Chicago, Ill.*
Subcommittee on Elastomers
Subcommittee on Oncology
Sub-Panel on Molybdenum

11 Subcommittee on Reasearch Area Priorities

15 Agricultural Research Institute and Agricultural Board
Agricultural Board, Executive Committee–Agricultural Research Institute, Organizing Committee
Food Protection Committee
Planning Meeting for Continuing Aerial Photographic Survey of Grain Fields
Task Group for a Study of Interagency Construction Council

15–19 Committee on American Geography, *Pinebrook, N. Y.*

17 Agricultural Board and Governing Board, Agricultural Research Institute
Conference on Gamma Globulin, *New York City*

18 Committee on Psychiatry and Ad hoc Committee on Stress (Joint Meeting)
Division of Medical Sciences, Executive Committee

19 Committee on Blood and Related Problems
Committee on Codification, Ciphering, and Punched-Card Techniques

20 Committee on Cancer Diagnosis and Therapy
Panel on Magnesium Alloy, *Philadelphia, Pa.*

21 Advisory Committee on Federal Construction Practices

22 Committee on Growth, Executive Committee, *New York City*
Sub-Panel on Ferritic Materials, *Philadelphia, Pa.*

23 Committee on Training and Research in Applied Mathematics

23–24 Subcommittee on Beta and Gamma Ray Measurements, *Boston, Mass.*

24 Subcommittee on Nuclear Geophysics

27 Committee on Feed Composition

29 Subcommittee on Radiobiology

29–31 Photosynthesis Symposium, *Gatlinburg, Tenn.*

30 Panel on Nickel Conservation
Steering Committee on Hospitals–Study of Conservation in Building Construction

31 Committee on Dentistry
Subcommittee on Biochemistry
Subcommittee on Biology
Subcommittee on Clinical Investigation
Subcommittee on Etiology and Pathology

NEW PUBLICATIONS

Atlas of Tumor Pathology. Section X, Fasc. 35 and 37, *Tumors of the Central Nervous System,* by James W. Kernohan and George P. Sayre. 129 p. $0.90. Section IV, Fasc. 15, *Tumors of the Parathyroid Gland,* by Benjamin Castelman. 74 p. $0.60. Washington, Armed Forces Institute of Pathology, 1952.

Committee on Growth, Sixth Annual Report to American Cancer Society, Inc. July 1950–June 1951. Division of Medical Sciences, National Research Council. 1952. 373 p.

Development of International Cooperation in Science: A Symposium. Academy–Council Office of International Relations. 1952. 27 p.

Digest of Literature on Dielectrics. Vol. XV. 1951. Academy–Council Publication No. 231. 1952. 203 p. $3.00.

Distribution of Ability of Students Specializing in the Different Fields. By Dael Wolfle and Toby Oxtoby. Reprinted from *Science,* 116:311–314, September 26, 1952.

Enrollment and Graduation Trends: From Grade School to Ph.D. Reprint from *School and Society,* 76:225–231, October 11, 1952. 7 p.

A Glossary of Terms in Nuclear Science and Technology. Section 2, Reactor Theory. New York, American Society of Mechanical Engineers, 1952. 12 p. $1.50.

Highway Relationships in Maryland. Highway Research Board, Special Report No. 6. Academy–Council Publication No. 229. 1952. 51 p. $0.75.

Performance of Concrete Pavement on Granular Subbase. Highway Research Board Bulletin No. 52. Academy–Council Publication No. 226. 1952. 36 p. $0.60.

Road Test One–Md. Effect of Controlled Truck Axle Loadings on Concrete Pavement. Highway Research Board Special Report No. 4. Academy–Council Publication No. 227. 1952. 142 p., and Appendix. $2.25.

Standard Values in Blood. Being the First Fascicle of a Handbook of Biological Data. Edited by Errett C. Albritton. Philadelphia, Saunders, 1952. 199 p. $4.50.

Study of Conservation in Building Construction. Office of Technical Services, Department of Commerce. 1952. $3.50.

Survey of the Literature of Dental Caries. Academy–Council Publication No. 225. 1952. 567 p. $3.00.

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NATIONAL RESEARCH COUNCIL

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The search for Truth is in one way hard and in another easy. For it is evident that no one can master it fully nor miss it wholly. But each adds a little to our knowledge of Nature, and from all the facts assembled there arises a certain grandeur.

—ARISTOTLE

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